

Application No.: 10/694,498
Reply to Office Action of July 14, 2005

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (currently amended) A method for controlling regeneration in a particulate filter coupled to an internal combustion engine, comprising:

controlling hydrocarbon injection into engine exhaust upstream of an oxidation catalyst disposed upstream of the particulate filter in accordance with a difference between the engine exhaust temperature upstream of the catalyst and a desired particulate filter regeneration temperature a temperature in a region both downstream of the catalyst and upstream of the particulate filter.

2. (original) The method recited in claim 1 wherein the predetermined desired particulate filter temperature is a temperature for regeneration within the filter.

3. (currently amended) ~~The method recited in claim 1~~ A method for controlling regeneration in a particulate filter coupled to an internal combustion engine, comprising:

controlling hydrocarbon injection into engine exhaust upstream of an oxidation catalyst disposed upstream of the particulate filter in accordance with a difference between the engine exhaust temperature upstream of the catalyst and a desired particulate filter regeneration temperature; and wherein the hydrocarbon injection control is a function of at least an engine operating condition and ambient conditions.

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4. (currently amended) ~~The method recited in claim 1~~ A method for controlling regeneration in a particulate filter coupled to an internal combustion engine, comprising:

controlling hydrocarbon injection into engine exhaust upstream of an oxidation catalyst disposed upstream of the particulate filter in accordance with a difference between the engine exhaust temperature upstream of the catalyst and a desired particulate filter regeneration temperature; and wherein the hydrocarbon injection control is a function of a difference between a temperature of the engine exhaust in a region between the catalyst and an entrance to the filter and a temperature of the engine exhaust downstream of the filter.

5. (currently amended) ~~The method recited in claim 1~~ A method for controlling regeneration in a particulate filter coupled to an internal combustion engine, comprising:

controlling hydrocarbon injection into engine exhaust upstream of an oxidation catalyst disposed upstream of the particulate filter in accordance with a difference between the engine exhaust temperature upstream of the catalyst and a desired particulate filter regeneration temperature; and wherein the hydrocarbon injection control is also a function of a feedback term, such feedback term being a function of a temperature of the particulate filter and the predetermined desired particulate filter temperature.

6. (currently amended) The method recited in claim 5 wherein the feedback term is the limited wherein the feedback term is an output of a limited PI controller with an input to such PI controller being the difference between a temperature associated with the particulate filter and a desired particulate filter temperature.

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7. (original) A method for controlling regeneration in a particulate filter coupled to an internal combustion engine, comprising:

controlling hydrocarbon injection into engine exhaust upstream of an oxidation catalyst disposed upstream of the particulate filter in accordance an algebraic sum of a feedforward term and a feedback term, such feedforward term being a function of a difference between with the engine exhaust temperature upstream of the catalyst and a predetermined desired particulate filter temperature and such feedback term being a function of a temperature of the particulate filter and the predetermined desired particulate filter temperature.

8. (original) The method recited in claim 7 wherein the predetermined desired particulate filter temperature is a temperature for regeneration within the filter.

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10. (currently amended) A engine control system comprising:

an internal combustion engine;
a particulate filter coupled to an internal combustion engine;
an oxidation catalyst disposed upstream of the particulate filter; and
a controller for controlling hydrocarbon injection into engine exhaust upstream of the oxidation catalyst in accordance with a difference between the engine exhaust temperature upstream of the catalyst and ~~a desired particulate filter regeneration temperature~~ a temperature in a region both downstream of the catalyst and upstream of the particulate filter.

11. (original) The system recited in claim 10 wherein the predetermined desired particulate filter temperature is a temperature for regeneration within the filter.

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12. (currently amended) ~~The system recited in claim 10.~~ A engine control system comprising:

an internal combustion engine;

a particulate filter coupled to an internal combustion engine;

an oxidation catalyst disposed upstream of the particulate filter; and

a controller for controlling hydrocarbon injection into engine exhaust upstream of the oxidation catalyst in accordance with a difference between the engine exhaust temperature upstream of the catalyst and a desired particulate filter regeneration temperature; and

wherein the hydrocarbon injection control is a function of at least an engine operating condition and ambient conditions.

13. (currently amended) ~~The system recited in claim 10.~~ A engine control system comprising:

an internal combustion engine;

a particulate filter coupled to an internal combustion engine;

an oxidation catalyst disposed upstream of the particulate filter; and

a controller for controlling hydrocarbon injection into engine exhaust upstream of the oxidation catalyst in accordance with a difference between the engine exhaust temperature upstream of the catalyst and a desired particulate filter regeneration temperature; and

wherein the hydrocarbon injection control is a function of a difference between a temperature of the engine exhaust in a region between the catalyst and an entrance to the filter and a temperature of the engine exhaust downstream of the filter.

14. (currently amended) ~~The system recited in claim 10.~~ A engine control system comprising:

an internal combustion engine;

a particulate filter coupled to an internal combustion engine;

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an oxidation catalyst disposed upstream of the particulate filter; and
a controller for controlling hydrocarbon injection into engine exhaust upstream of the
oxidation catalyst in accordance with a difference between the engine exhaust
temperature upstream of the catalyst and a desired particulate filter regeneration
temperature; and
wherein the hydrocarbon injection control is also a function of a feedback term, such
feedback term being a function of a temperature of the particulate filter and the
predetermined desired particulate filter temperature.

15. (currently amended) The system recited in claim ~~15~~14 wherein the feedback term
is ~~the limited~~ is an output of a limited PI controller with an input to such PI controller
being the difference between a temperature associated with the particulate filter and a
desired particulate filter temperature.

16. (original) A system, comprising:
an internal combustion engine;
in a particulate filter coupled to an internal combustion engine;
an oxidation catalyst disposed upstream of the particulate filter; and
a controller for controlling hydrocarbon injection into engine exhaust upstream of the
oxidation catalyst in accordance an algebraic sum of a feedforward term and a feedback term,
such feedforward term being a function of a difference between with the engine exhaust
temperature upstream of the catalyst and a predetermined desired particulate filter
temperature and such feedback term being a function of a temperature of the particulate filter
and the predetermined desired particulate filter temperature.

17. (original) The system recited in claim 17 wherein the predetermined desired
particulate filter temperature is a temperature for regeneration within the filter.

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18. (currently amended) An article of manufacture comprising:

a computer storage medium having a program encoded for controlling regeneration in a particulate filter coupled to an internal combustion engine, such computer storage medium comprising:

code for controlling hydrocarbon injection into engine exhaust upstream of an oxidation catalyst disposed upstream of the particulate filter in accordance with a difference between the engine exhaust temperature upstream of the catalyst and ~~a desired particulate filter regeneration~~ a temperature in a region both downstream of the catalyst and upstream of the particulate filter.

19. (original) The article of manufacture recited in claim 19 wherein the computer storage medium is a semiconductor chip.

20. (new) The method recited in claim 7 wherein the predetermined desired particulate filter temperature is a temperature for regeneration within the filter.

21. (new) The method recited in claim 7 wherein the hydrocarbon injection control is a function of at least an engine operating condition and ambient conditions.

22. (new) The method recited in claim 7 wherein the hydrocarbon injection control is a function of a difference between a temperature of the engine exhaust in a region between the catalyst and an entrance to the filter and a temperature of the engine exhaust downstream of the filter.

23. The method recited in claim 7 wherein the hydrocarbon injection control is also a function of a feedback term, such feedback term being a function of a temperature of the particulate filter and the predetermined desired particulate filter temperature.

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24. The method recited in claim 23 wherein the feedback term is an output of a limited PI controller with an input to such PI controller being the difference between a temperature associated with the particulate filter and a desired particulate filter temperature.